

KURT ET AL. — 10/647,784
Client/Matter: 081468-0305598

IN THE SPECIFICATION:

Page 4, delete paragraph [0013] and replace it with the following new paragraph:

[0013] This and other aspects are achieved according to the invention in a lithographic apparatus including a radiation system configured to supply a projection beam of radiation; a support structure configured to support a patterning device, the patterning device configured to pattern the projection beam according to a desired pattern; a substrate table configured to hold a substrate; a projection system configured to project the patterned beam onto a target portion of the substrate; and at least one optical element on which the projection beam is incident having a Si/Mo multilayer structure, a capping layer and an interlayer positioned between the multilayer structure and the outer capping layer, wherein the outer capping layer includes (i) C or Mo or (ii) an inner interlayer including Mo next to the multilayer structure and an outer interlayer including C next to the capping layer wherein (i) the interlayer has a thickness of between 6.0 and 9.0 nm and, in (ii) the outer interlayer has a thickness greater than about 3.4 nm or the capping layer has a thickness greater than about 2.0 nm.

Page 5, delete paragraph [0015] and replace it with the following new paragraph:

[0015] According to a further aspect of the invention there is provided a device manufacturing method including providing a substrate that is at least partially covered by a layer of radiation-sensitive material; providing a patterned projection beam of radiation; projecting the patterned beam of radiation onto a target portion of ~~[[the]]~~ a layer of radiation-sensitive material at least partially covering a substrate using at least one optical element on which the projection beam is incident, wherein the at least one optical element has a Si/Mo multilayer structure, an outer capping layer and an interlayer including C or Mo positioned between the multilayer structure and the outer capping layer, the interlayer has a thickness of between 6.0 and 9.0 nm or the interlayer includes an inner interlayer including Mo next to the multilayer structure and an outer interlayer including C next to the capping layer, the outer interlayer of C has a thickness greater than about 3.4 nm or the capping layer has a thickness greater than about 2.0 nm.

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Page 7, delete paragraph [0029] and replace it with the following new paragraph:

[0029] The source LA (e.g. a discharge or laser-produced plasma source) produces radiation. This radiation is fed into an illumination system (illuminator) IL, either directly or after having traversed a conditioning device, such as a beam expander Ex, for example. The illuminator IL may comprise an adjusting device AM configured to set the outer and/or inner radial extent (commonly referred to as σ -outer and σ -inner, respectively) of the intensity distribution in the ~~projection~~ beam PB. In addition, it will generally comprise various other components, such as an integrator IN and a condenser CO. In this way, the ~~projection~~ beam PB impinging on the mask MA has a desired uniformity and intensity distribution in its cross-section.

Page 7, delete paragraph [0031] and replace it with the following new paragraph:

[0031] The beam PB subsequently intercepts the mask MA, which is held on a mask table MT. Having traversed the mask MA, the beam PB passes through the lens PL, which focuses the beam PB onto a target portion C of the substrate W. With the aid of the second positioning device PW and interferometer(s) IF, the substrate table WT can be moved accurately, e.g. so as to position different target portions C in the path of the beam PB. Similarly, the first positioning device PM can be used to accurately position the mask MA with respect to the path of the beam PB, e.g. after mechanical retrieval of the mask MA from a mask library, or during a scan. In general, movement of the object tables MT, WT will be realized with the aid of a long-stroke module (coarse positioning) and a short-stroke module (fine positioning), which are not explicitly depicted in Figure 1. However, in the case of a wafer stepper (as opposed to a step and scan apparatus) the mask table MT may just be connected to a short stroke actuator, or may be fixed. The mask MA and the substrate W may be aligned using mask alignment marks M₁, M₂ and substrate alignment marks P₁, P₂.

1. The depicted apparatus can be used in two different modes:

In step mode, the mask table MT is kept essentially stationary, and an entire mask image is projected at once, i.e. a single "flash," onto a target portion C. The substrate table WT is then shifted in the X and/or Y directions so that a different target portion C can be irradiated by the beam PB;

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2. In scan mode, essentially the same scenario applies, except that a given target portion C is not exposed in a single "flash." Instead, the mask table MT is movable in a given direction (the so-called "scan direction", e.g., the Y direction) with a speed v , so that the projection beam PB is caused to scan over a mask image. Concurrently, the substrate table WT is simultaneously moved in the same or opposite direction at a speed $V = Mv$, in which M is the magnification of the lens PL (typically, $M = 1/4$ or $1/5$). In this manner, a relatively large target portion C can be exposed, without having to compromise on resolution.